

# THIN-FILM TRANSISTORS FORMED ON A FLEXIBLE SUBSTRATE

## CROSS-REFERENCE TO RELATED APPLICATIONS

5 This application is a divisional of application Serial Number  
and 10/194893 (US 6,642,042)  
4115/010/109,895, filed July 11, 2002, entitled "Thin-Film Transistors Formed on  
a Metal Foil Substrate," invented by Voutsas et al.

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

10 This invention generally relates to integrated circuit (IC) and liquid crystal display (LCD) fabrication and, more particularly, to thin-film transistors (TFTs) formed on a metal foil substrate and a process for forming the same.

### 2. Description of the Related Art

15 High quality polycrystalline silicon material is the building block of high performance TFTs that are used in integrated circuits and microelectronic devices such as LCD's. The higher the quality of the poly-Si material, that is, the closer to single-crystal Si material, the better the performance of the resultant devices. Therefore, it is desirable to develop 20 methods that yield high quality polysilicon (poly-Si) material for display or other electronic products.

The performance of the device is affected not only by the crystalline quality of the active layer, but also by the quality of the gate insulator film that covers the active layer. Both the bulk properties of the 25 gate insulator, as well as the properties of the interface that forms between the gate insulator and the poly-Si layer, are very important for the operation of the device. For Si or poly-Si devices, the best gate insulator film is SiO<sub>2</sub>, and the best method of forming a high quality SiO<sub>2</sub> film with excellent bulk and interface properties is by thermal oxidation.

30 A silicon substrate has a sufficiently high melting point to withstand thermal treatments up to temperatures in the range of 1200°C.